Detection Capabilities for LC Penner Co.

LC Penner Co.
2313 E. Philadelphia St.
Suite P
Ontario, CA 91761

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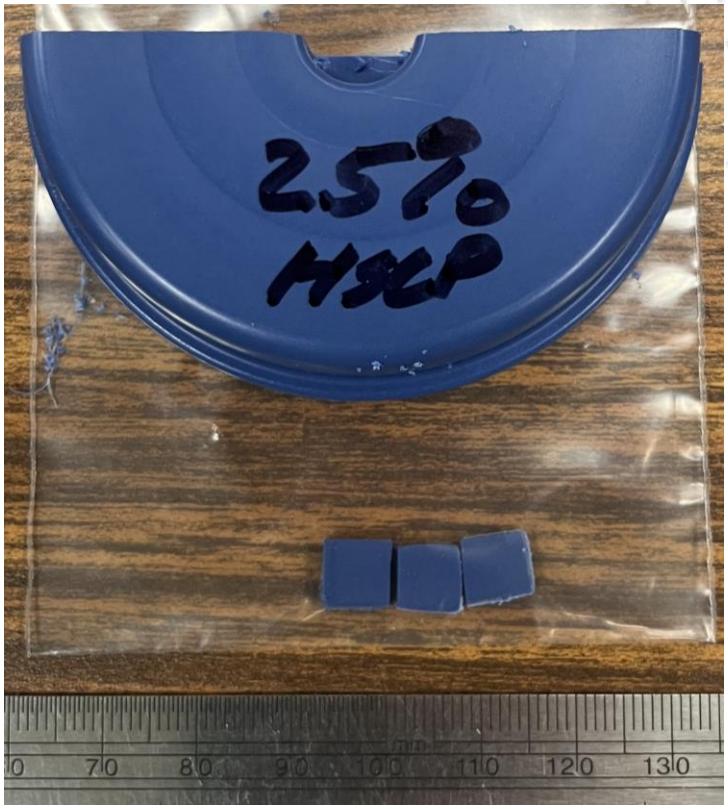
Testing Protocol

Material:	MD Series Dust Caps with PolyMag HSCP
Test Equipment Used:	Xtreme Metal Detector 14”W X 8”H
Frequency Range:	Range 5
Physical State:	Solid
Product Temperature:	Ambient (~72° F)
Notes:	1. The customer provided four different samples of plastic dust caps with various concentrations of PolyMag HSCP pellet. 2. The four samples had 15%, 25%, 35%, and 40% PolyMag added. 3. From the base of each cap, three ~7 mm x ~7 mm squares were cut. The pieces tested were 7 mm x 7 mm x 2.1 mm). 4. Each sample piece had its signal measured by the metal detector in two orientations, 90° from each other, then equated with a ferrous sphere size based on its signal length. 5. A sphere has no orientation.

Ferrous Sphere Equivalents

DUST CAP 25% POLYMAG HSCP	
Ferrous Spherical Equivalent (mm)	
1	3.1
2	2.9
3	3.0
4	3.2
5	3.1
6	3.0



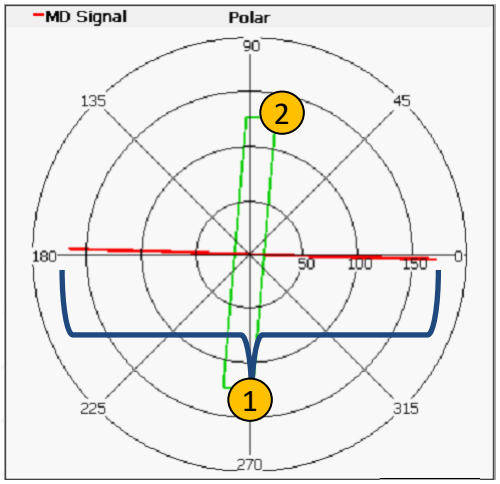
Ferrous Sphere Equivalents

Chain Adapter Thread - Whole	
Ferrous Spherical Equivalent (mm)	
1	>8.0
2	>8.0

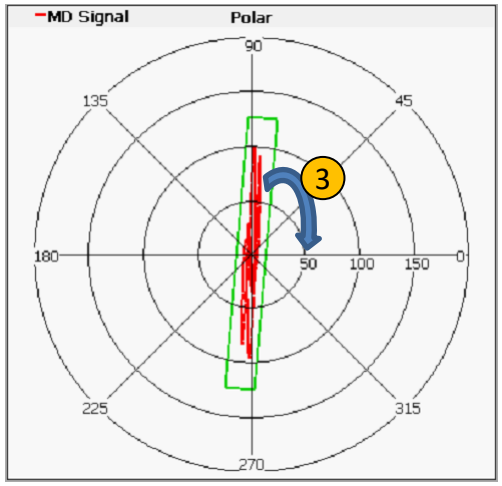
Chain Adapter Thread - Half	
Ferrous Spherical Equivalent (mm)	
1	>8.0
2	>8.0

PolyMag® Detection Explained

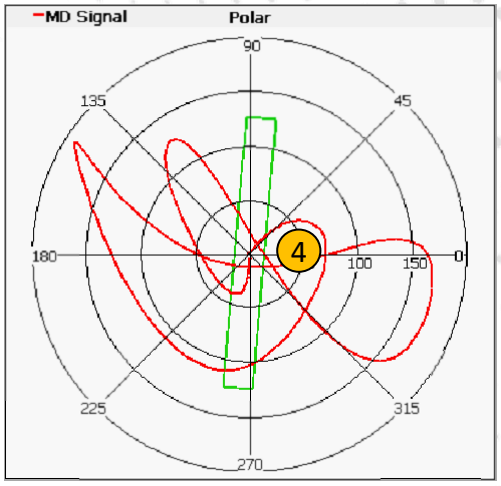
PolyMag® Only



Food Product Only



Food Product with PolyMag®



1. Magnitude of the PolyMag® Signal (red)
2. Detection Boundary for the Food Product (green)
3. Phase Angle of the Product Signal (typical for meat/produce)
4. Detection occurs when the product signal (red) crosses the detection boundary (green).

Notes:

1. Sample parts were provided by the customer.
2. These samples would be more difficult to detect in a dry non-conductive product; products with a phase out point of approximately zero degrees. Larger Pieces could be detected where the magnitude of the contaminant is much larger than that of the good product. For the Xtreme metal detector this would be length detection.
3. Refer to the charts above for the equivalent ferrous/mild steel test sphere sizes for each sample size when setup for a wet or conductive product with a phase out point around ninety degrees.
4. Liquid line systems typically are setup to detect between 0.5mm and 2.5mm mild steel test spheres depending on the pipe size and product signal.
5. Packaged products typically are setup to detect between 1.5mm and 4.0mm mild steel test spheres depending on the aperture size and the product signal.

Qualifiers:

1. These results are based on the information and sample provided. If either should change, these results may be affected.
2. These results are expected in typical installations. Some installations may influence these results. All installation guidelines must be followed.
3. A power line conditioner for the metal detector should be considered if used on other existing equipment (i.e., computers, weigh scales, etc.) at the installation site.
4. All non-hazardous samples will be disposed within 60 days from the completion of the product tests, unless alternative instructions are given.